

Document Control Record

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1. Introduction

Stratum Civil on behalf of Northrock Marulan Pty Ltd has engaged Burchills Engineering Solutions to prepare a Civil Engineering Report to support a Development Application for an extension of 806-818 Greenbank Road, North Maclean.

This report assesses the civil engineering aspects of the proposed development and demonstrates that the site can be developed and provided with the required infrastructure and essential services generally in accordance to Logan City Council & EDQ requirements, SEQ Water Supply and Sewerage, Design and Construction Code and best management practices.

1.1 Scope of Report

This report describes the existing physical conditions of the site and elements of civil engineering proposed for development with respect to:

- Project Identification;
- Proposed Development;
- Site Earthworks;
- Roadworks, Access and Traffic;
- Stormwater Drainage;
- Water Supply;
- Sewer Reticulation; and
- Electricity and Telecommunications Supply.



2. Project Identification

2.1 Location

The subject site is located at 806-818 Greenbank Road, North Maclean, and is legally described as Lot 3 on RP 900179 and has an area of approximately 29,760 meters squared.

The site is situated within the Logan City Council Local Government Area and falls within the Greater Flagstone Priority Development Area (PDA). Primary access will be achieved from a proposed new development located at 820 Greenbank Road (Lot 2 on 868726).



Figure 2.Error! Bookmark not defined. **Site Locality Plan**

2.2 Physical Description

The subject site has frontage along its southern boundary to Greenbank Road. The sites levels generally fall west to east with the lowest point at the north-eastern part of the development. The land currently contains a dwelling located in the southern portion of the site, with the northern portion largely undeveloped.

The site is bounded by the following existing land uses:

- | | |
|--------|---|
| North: | Neighbouring Development (Approved development site); |
| South: | Greenbank Road; |
| East: | Neighbouring Development (Approved development site); and |
| West: | Low-density residential dwellings; |



2.3 Zoning

The subject site is located within the Logan City Council Local Government Area and falls within the Greater Flagstone Priority Development Area (PDA), which was declared by the Queensland Government on 8 October 2010 to facilitate the coordinated planning and delivery of a major new urban community.

While the site is situated within the Logan LGA, land within the PDA is primarily governed by the Greater Flagstone PDA Development Scheme, which prevails over the Logan Planning Scheme where applicable. Notwithstanding this, the Logan Planning Scheme remains relevant in informing infrastructure planning, servicing strategies, and broader contextual considerations such as surrounding zoning, overlays, and development interfaces external to the PDA. According to the Greater Flagstone PDA Development Scheme, the site falls within the 'industry & business' zone.

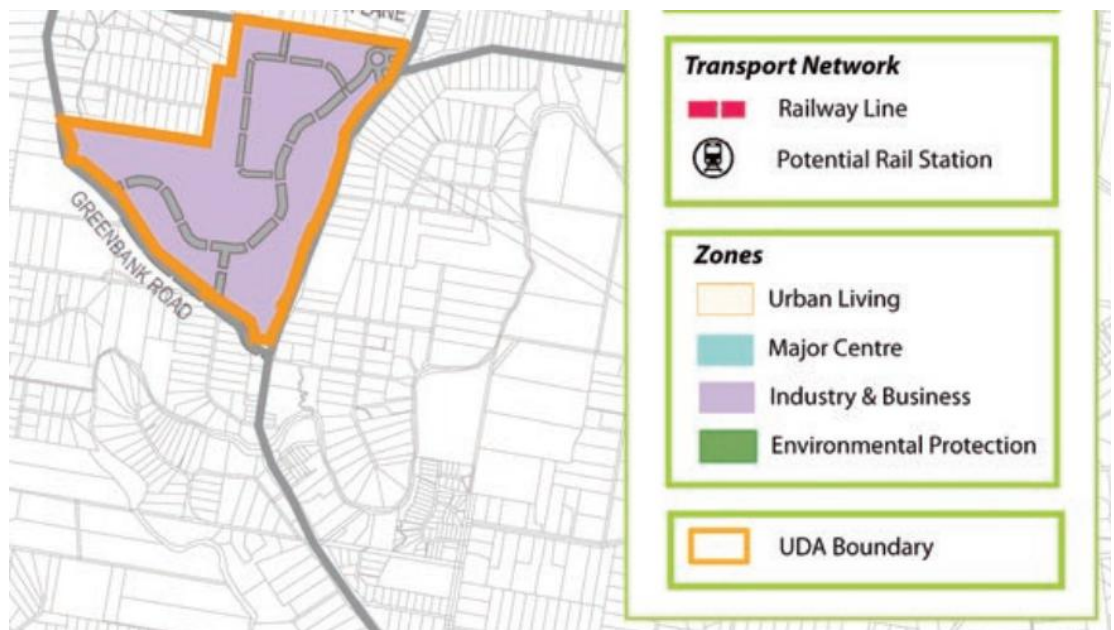


Figure 2.1 Current Development Layout

The subject site falls within the North Maclean locality, which forms part of the PDA and is identified as a key future employment and industrial precinct supporting the long-term growth of the region. f

The proposed development has been prepared having regard to the applicable provisions of the Greater Flagstone PDA Development Scheme, as well as relevant planning considerations under the Logan Planning Scheme where appropriate. The design response is therefore considered to be generally consistent with the strategic land use intent, infrastructure coordination objectives, and statutory planning controls applicable to the site.

2.4 Existing Topography

The site generally grades from west towards the east. The highest point within the site is approximately RL 39.40 m at the western portion of the site near the proposed Lot 3 and 4. The lowest point is approximately RL 34.80 m located towards the north-eastern boundary.

Reference can be made to the detailed site survey prepared by Schlencker Surveying (QLD) which can be found in Appendix B.

3. Proposed Development

The proposed development consists of an industrial subdivision creating nine allotments ranging in size from approximately 2,021 m² to 3,563 m² as shown in Figure 3.1.

The proposed development adjoins an approved development to the north and east sides and connects to proposed road and infrastructure network of the adjoining site.

Works associated with the development include construction of internal roadworks, Lot earthworks, stormwater drainage infrastructure, water supply and sewer reticulation to service the subdivision. Stormwater runoff from the development will discharge to the proposed bio-basin located on the eastern side of Lot 2, prior to discharging to existing drainage system located to the north in the proposed adjacent development.

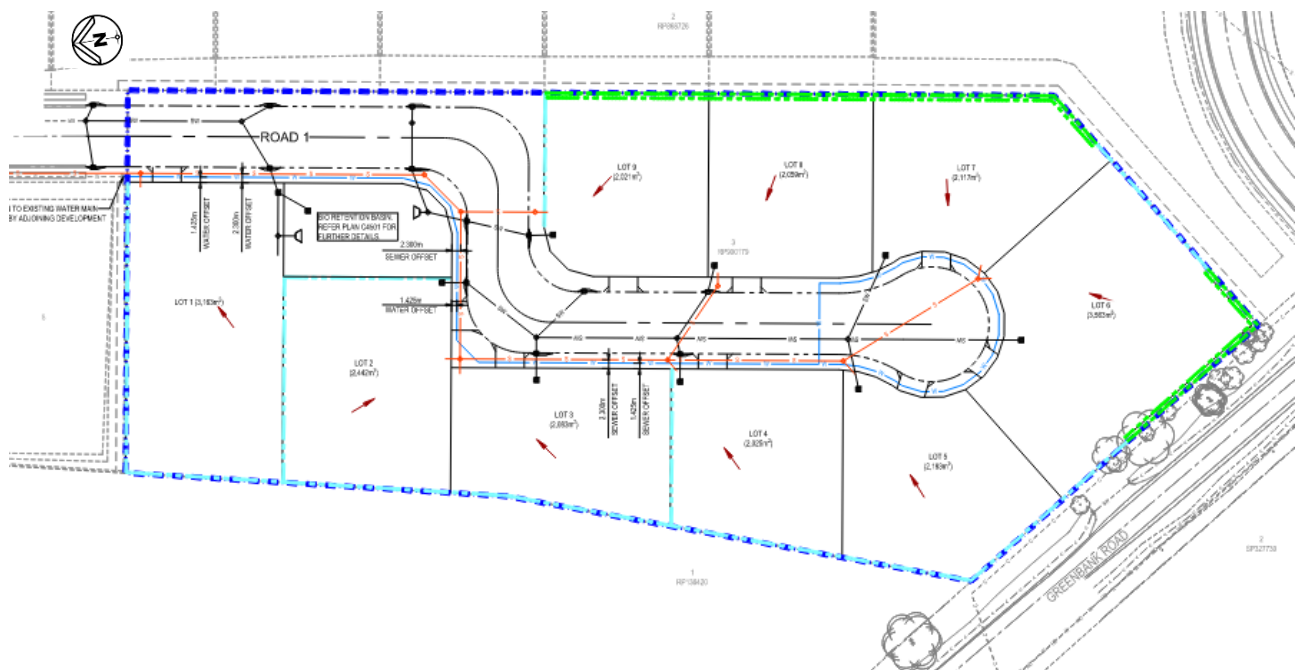


Figure 3.1 Site Plan



4. Site Earthworks

The earthworks within the proposed development will involve cut and fill to facilitate construction of the internal road network, stormwater infrastructure, sewer and formation of level industrial building pads.

The earthworks design presents cut and fill across the site and limits earthworks to the proposed development. Based on preliminary earthworks calculations, the development will require approximately 14,400 m³ of excavation and 8,900 m³ of fill.

Finished surface levels have been designed to provide positive drainage across the site and ties into the adjoining properties infrastructure without creating adverse impacts.

Refer to the Concept Earthworks drawings (BE240612-DA): C2601, C2602, C2801 and C2802 which can be found in Appendix C for details of the areas of preliminary cut and fill and finished surface levels for the proposed development.

4.1 Sediment and Erosion Control

The best management practices will be implemented according to the IECA Best Practice Erosion and Sediment Control (2008) guidelines and will be thoroughly investigated with further design plans to be provided at the Operational Works phase.

The following is a procedure of water quality controls to be implemented for the construction phases of the development.

4.1.1 Phase 1 – Stripping and Bulk Earthworks

- Identify and mark all trees to be retained and erect exclusions zones, if required.
- Prior to any demolition, stripping or bulk earthworks on site, sediment fences, inlet traps, gully protection and entry/exit pad shall be put in place.
- A wash-down area and entry/exit pad will be provided at the construction site entrance to minimise the amount of sediment being tracked off the site.
- The wash down area will be drained to a suitable sediment capture device installed downstream of the construction entry.
- Sediment fences are to be installed along the downstream property boundaries prior to stripping and earthworks commencing.
- Construct an appropriately sized sediment basin for the development.
- If refuelling of machinery is to occur on site, appropriate absorbent products for cleaning oil spills will be provided.
- Provide bins on site for the disposal of waste and building debris.
- All fresh water upstream of disturbed areas and stockpiles is to be diverted around the disturbed area to minimise the amount of sediment mobilization.
- If it is anticipated that stockpiled material will not be used for a period of two weeks or more, a polythene cover (or equivalent) shall be used to prevent sediment transport by rain during wet periods. Conversely during dry spells, a cover shall be used to prevent fine sediments becoming airborne.



- The contractor shall provide on-going maintenance of sediment and erosion control devices around the site.
- The contractor is to stage all works so that disturbed areas remain exposed for a short a period as practicable.

Measures to minimise airborne pollutants during construction in the form of dust during dry and/or windy weather shall include the following:

- Exposed soils shall be kept damp to prevent particulates becoming airborne; and
- Stockpiles exposed for more than two weeks shall be covered to prevent wind erosion.

4.1.2 Phase 2 – Infrastructure, Building and Roadworks

- The site stormwater pipes and pits shall be installed with drop inlets provided to all pits.
- Provide sediment fences, sandbags or fine mesh cover to all gully pits.
- Monitoring of new stormwater pipes and infrastructure (including the storm water quality improvement devices) to ensure they are free of sediment and debris.
- Maintain shake down and wash down area at entry/exit.
- All disturbed areas are to be surfaced or landscaped/grassed (maintained to minimum 70% ground cover) as soon as practicable after completion of localized works.

4.1.3 Phase 3 – Finishing Works and Defects Liability Period

All erosion and sediment control measures, including sediment fences and inlet traps shall be maintained until completion of surface finishes including landscaping and turfing:

- Maintain sediment fences.
- Tend to landscaped areas to maintain ground cover.



5. Roadworks, Access and Traffic

The proposed development will be accessed via the proposed internal road network associated with the approved adjoining development located to the north and east of the site. The approved road network will connect to Willowbrook Road, which forms connection to Greenbank Road.

The surrounding road network operates as follows:

- **Greenbank Road:** Two-way Rural Collector, with a speed limit of 80km/h
- **Willowbrook Road:** Rural Access, with a speed limit of approximately 50km/h

The adjoining development has been approved with road infrastructure designed to accommodate traffic generated from both developments (approved and proposed). The proposed development will utilise the approved road network of the adjoining development for vehicular access and therefore will not require direct vehicle access to and from Greenbank Road.



Figure 5.1 Site Location and External Road Network

The proposed development comprises an internal road which extends from the northern boundary into the site to provide direct vehicle access to all nine (9) allotments. Furthermore, a cul-de-sac formation has been provided at the end of the road to accommodate vehicle turnaround provisions. The proposed internal road is illustrated above in Figure 5.1.

The proposed internal road has been designed in accordance with the EDQ Street and Movement Network PDA Guideline No.6 (February 2019) for an Industrial Access Street typology, in line with the internal road network of the adjoining lot.

The proposed internal road cross section is illustrated below in Figure 5.2.



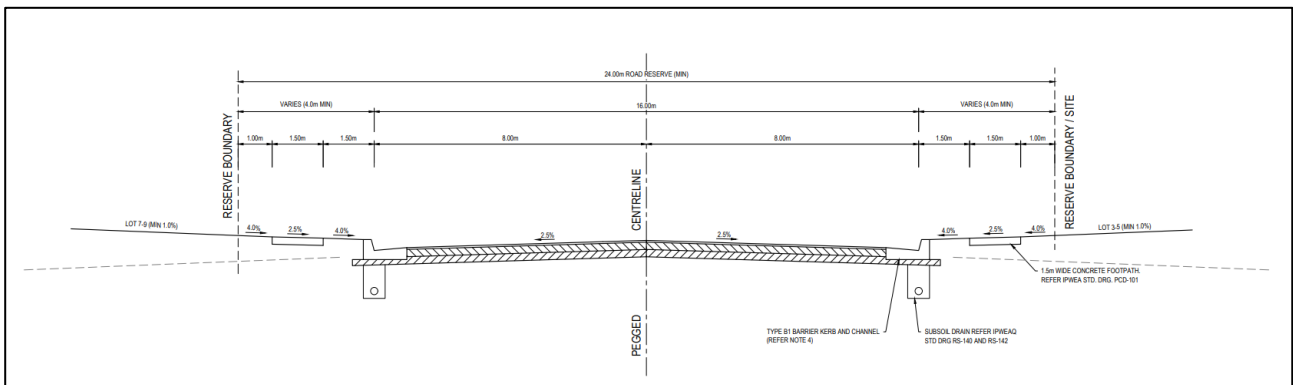


Figure 5.2 Road Cross Section

The proposed development provides a 24m road reserve and 16m carriageway to tie into the proposed neighbouring development on 820 Greenbank Road. The internal road will be made up of a 16m carriageway with two-way traffic movement and parking on each side. A 4m wide will be provided with a 1.5 m wide pedestrian path. In line with the adjoining development, It is noted that the internal road has been designed to accommodate 26m B-Doubles and 19m Articulated Vehicles.

Whilst Greenbank Road is not presently a B-Double route, future upgrades are expected to facilitate such access to ensure B-Doubles are able to service the approved and proposed development.

On this basis, the proposed road network is considered suitable for the proposed operations of the development and is consistent with the approved internal road network of the adjoining development.

6. Stormwater Drainage

Stormwater runoff generated from the proposed subdivision will be collected via a system of pits and pipes and conveyed to a bioretention basin located between lot 2 and Road 1 prior to discharging to the proposed in ground stormwater drainage pipe network (LPOD).

The basin has been designed to treat runoff generated from the proposed development only.

A bioretention basin is proposed within the development to provide stormwater quality treatment prior to discharge. The basin is designed to treat runoff generated from the proposed site, including the internal road network and allotments, and has been sized to achieve WQOs set by the SPP (2017) and Logan City Council.

Refer to the Conceptual Stormwater Management Plan 'CSMP' (Report No. BE240612-RP-CSMP-00) which investigates the site in its pre-development and post-development states.

For civil plans refer to the Concept Roadworks & Stormwater Drainage Layout Plan: BE240612-DA C3101 C4501 and which can be found in Appendix B.



7. Water Supply

The proposed development will be serviced via connection to the adjoining developments potable water infrastructure, which then connects to the existing water main within Greenbank Road.

A new internal reticulation network will be constructed within the development to supply water to each allotment. The water mains will be installed within the road verge in accordance with Logan City Council standards. Minimum cover to water infrastructure will be not less than 600mm with the proposed servicing arrangement consistent with the approved infrastructure planning for the locality and provides a compliant and efficient water supply solution for the development.

Refer to the Concept Water and Sewer Design: BE240612-DA-C5101 which can be found in Appendix B.

8. Sewer Reticulation

The proposed development will be serviced via connection to the adjoining developments proposed sewer infrastructure.

A new sewer reticulation network will be constructed within the site to service each allotment and connect to the adjoining development infrastructure. With the sewer infrastructure being designed and constructed in accordance with Logan City Council standards. Minimum cover to sewer main will be no less than 600mm.

Refer to the Concept Water and Sewer Design: BE240612-DA-C5101 which can be found in Appendix B.

9. Electrical, Telecommunications and Gas

The survey indicates that there are existing electrical, telecommunications and gas services to the existing lot.

It is anticipated that adequate supply can be provided to the site extension from the existing infrastructure.

Not with standing, a specialist consultants shall be engaged to provide advice in relation to internal service reticulation requirements, prepare detailed designs and to liaise with the relevant authorities.



Appendix A – Detailed Site Survey





Scale 1:250 @ A0 - Lengths are in metres.

Orthomosaic Aerial
Photo captured with
DJI Phantom 4 Drone
on 15/10/2024.

 General Notes

This Plan has been prepared for the Client under specific instructions as per the Job Brief. It is not to be used for any other purpose, and is not to be used by any other person or corporation for any other purpose, and is subject to the following limitations:

- 1) The boundaries shown hereon have been determined from plan dimensions only and not by field survey. No search has been undertaken for Easements or other encumbrances on Title.
- 2) No report is made on any services, or features other than those shown hereon. Services have been located from visible indicators & relevant Authority records. Prior to any demolition, excavation or construction, relevant Authorities should be contacted for the possible location of further services and detailed location of all services.

Liveness of underground services on this plan are in accordance with
 AS5455 – Classification of subsurface utility information (SUI).
 (GL-A) = (+0.050mm)
 (GL-B) = (+0.3Hx0.5V)
 (GL-C) = (+0.300mm, 2D)
 (GL-D) = [EXISTING RECORDS]
 GL-D is approximate only and has been scaled from relevant Authority records.

3) Legend

- 1. Water
- 2. Stormwater
- 3. Common Uilground
- 4. Electricity Overhead
- 5. Top of Bank
- 6. Top of Bank

4) These notes form an integral part of this plan and no part of this plan may be reproduced in whole or in part without these notes.

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DETAIL & LEVEL
SURVEY

Lot 3 on RP900179
LOGAN CITY COUNCIL
805-518 GREENBANK ROAD,
NORTH MACLEAN

Level Datum : AHD Derived
Source : Survey of the Region

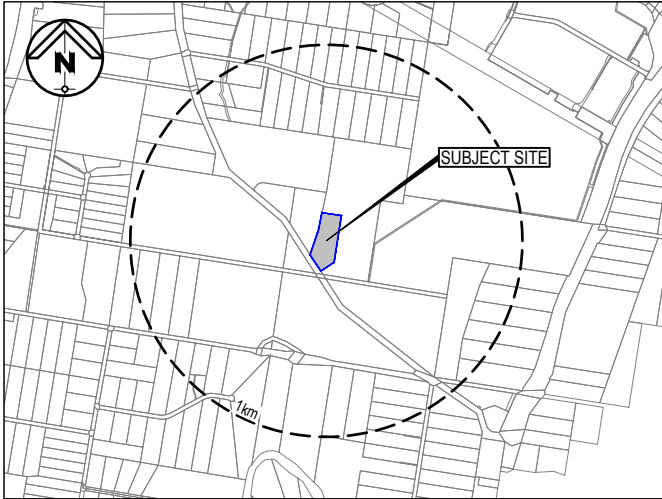
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JRM & EBB				15/10/2024	
DRAWN		DATE		CHECKED	
RJR		22.10.2024		JRM 23.10.2024	
SCALE ● AD			DWG. NO.		
1:250			24119-02		

Appendix B – Preliminary Civil Engineering Plans



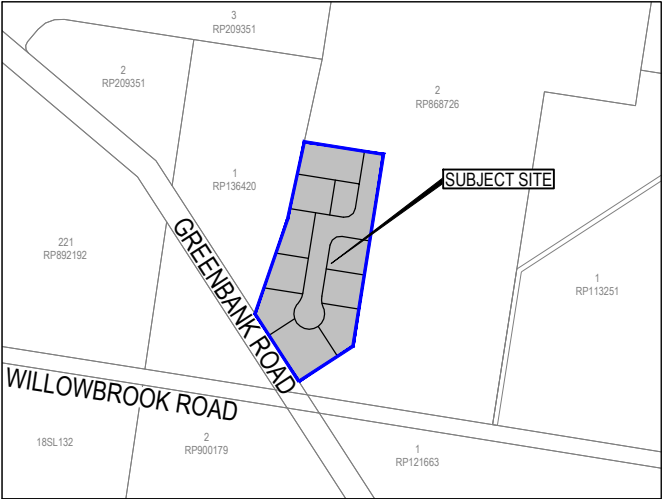
PROPOSED INDUSTRIAL DEVELOPMENT
AT 806-818 GREENBANK ROAD,
NORTH MACLEAN, QUEENSLAND

ROADWORKS & CIVIL SERVICES
DEVELOPMENT APPROVAL
CONTRACT BE240612-DA



LOCALITY PLAN
N.T.S.

DRAWING INDEX	
DRG. No.	DESCRIPTION
C1000	COVER SHEET & DRAWING INDEX
C1001	TYPICAL SECTIONS, NOTE AND DETAILS
C2601	CONCEPT EARTHWORKS LAYOUT PLAN
C2602	EARTHWORKS NOTES
C2801	CONCEPT EARTHWORKS SECTIONS - SHEET 1 OF 2
C2802	CONCEPT EARTHWORKS SECTIONS - SHEET 2 OF 2
C3101	CONCEPT ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN
C3501	ROADWORKS SWEPT PATH PLAN
C4501	CONCEPT BASIN LAYOUT PLAN
C5101	CONCEPT SERVICES LAYOUT PLAN
C9000	HAZARD RISK REGISTER - DESIGN RISKS



NEIGHBOURHOOD PLAN
N.T.S.

PREPARED FOR
NORTHROCK MARULAN P/L



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Coote Burchills Engineering Pty Ltd
ABN 76 166 942 365

FOR APPROVAL

PROJECT No.: BE240612-DA		DRAWING No.: C000	VERSION: A
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DATE: 03-03-26

1. BATTER SLOPES AND PAVEMENT CROSSFALLS SHOWN ON THIS DRAWING ARE TYPICAL ONLY. FOR VARIATION FROM THE STANDARD PROFILES REFER RELEVANT ROADWORKS DRAWINGS.
2. PAVEMENT DEPTHS SHOWN ON THIS DRAWING ARE DESIGN DEPTHS ONLY AND MAY BE VARIED ONCE SUBGRADE TESTS ARE TAKEN. TURNOUTS ARE TO BE PAVED WITH THE SAME MATERIAL AND COMPACTED TO THE SAME STANDARD AS THE ROAD ADJACENT.
3. KERB AND CHANNEL, MEDIAN KERB AND OTHER EDGE SECTIONS SHALL BE CONCRETE CLASS N32, AND THE MIX DESIGNED SPECIFICALLY FOR EXTRUSION.
4. REFER IPWEAQ STD. DRG. RS-080 FOR TYPICAL KERB DETAILS AND NOTES.
5. FOR DETAILS OF SIDE-DRAIN CONSTRUCTION REFER IPWEAQ STD. DRG. RS-140 AND RS-142.



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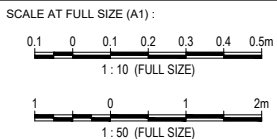
A	ISSUE FOR DA	03-03-26
VER.	DESCRIPTION	DATE



CLIENT : NORTHROCK MARULAN P/L

DRAWING TITLE :	
TYPICAL SECTIONS, NOTE AND DETAILS	
PROJECT :	
PROPOSED INDUSTRIAL SUBDIVISION AT 806-818 GREENBANK ROAD, NORTH MACLEAN	

FOR APPROVAL



DEVEL. APPLIC. No. :		DATE : 03-03-26
PROJECT LEADER : BLAKE HALL	DESIGNER : L.D.L.	
DRAFTSPERSON : H.A.	CHECKED : DALE MCINNES	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
PROJECT No. : BE240612-DA	DRAWING No. : C1001	VERSION: A



LEGEND

- 38.00 --- EXISTING SURFACE CONTOURS
- 38.00 --- DESIGN SURFACE CONTOURS (MAJOR)
- --- DESIGN SURFACE CONTOUR (MINOR)
- SW --- SW --- EXISTING STORMWATER
- W --- W --- EXISTING WATER
- S --- S --- EXISTING SEWER
- OH --- OH --- EXISTING OVERHEAD ELECTRIC
- C --- C --- EXISTING COMMS
- --- EXISTING ROAD CONTROL LINE
- --- EXISTING KERB
- --- DEVELOPMENT SITE BOUNDARY
- --- PROPOSED ROAD CONTROL LINE
- --- PROPOSED KERB (TYPE B2)
- --- PROPOSED SLEEPER RETAINING WALL (UP TO 1.5m SINGLE TIER)
- --- PROPOSED SLEEPER RETAINING WALL (1.5m - 3.0m DOUBLE TIER)
- --- PROPOSED EARTHWORKS PAD
- 37.50 PREFERRED BENCH LEVEL
- 37.50 FINISHED SURFACE LEVEL
- EARTHWORKS AREA OF FILL
- EARTHWORKS AREA OF CUT
- Y Y INDICATIVE HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA RSD-102

NOTE:
THIS IS A GENERIC LEGEND. NOT ALL ITEMS WITHIN THIS LEGEND MAY BE PRESENT ON THIS PLAN AND THE SCALE OF ITEMS MAY BE DIFFERENT TO THE ITEMS PRESENTED ON THIS PLAN

CONCEPT BULK EARTHWORKS SUMMARY	
EXCAVATION	
AREA	NETT CUT
OVERALL FILLING	16,804 cu.m.
STRUCTURAL FILLING	
AREA	NETT SOLID FILL
OVERALL EXCAVATION	8,782 cu.m.
SUMMARY: TOTAL MATERIAL EXCAVATED (NETT CUT) = 8,022cu.m. i.e. 16,804 cu.m. - 8,782 cu.m. = 8,022 cu.m. NOTE: NO ALLOWANCES HAVE BEEN MADE FOR TOPSOIL STRIP, FOOTPATHS, LANDSCAPING, DRIVEWAY BOXING NOR ROAD BOXING.	

NOTE:
ALL DESIGN/SETOUT INFORMATION SHOWN ON THIS DRAWING IS AVAILABLE IN DIGITAL FORMAT FROM THE OFFICE OF THE SUPERINTENDENT UPON REQUEST BY THE CONTRACTOR.

WARNING: UNDERGROUND SERVICES:
UNDERGROUND SERVICES EXIST IN THIS VICINITY. THE CONTRACTOR IS TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM EXACT LOCATION OF SERVICES ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION COMMENCING.



CONCEPT EARTHWORKS LAYOUT PLAN

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NORTHROCK MARULAN P/L

CLIENT :

DRAWING TITLE :

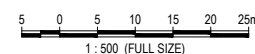
CONCEPT EARTHWORKS LAYOUT PLAN

PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

FOR APPROVAL

SCALE AT FULL SIZE (A1) :



DEVEL. APPLIC. No. : DATE : 03-03-26

PROJECT LEADER : BLAKE HALL DESIGNER : L.D.L.

DRAFTSPERSON : H.A. CHECKED : DALE MCINNES

APPROVED FOR AND ON BEHALF OF
BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365

PROJECT No. : DRAWING No. : VERSION:

BE240612-DA C2601 A

GENERAL EARTHWORKS NOTES:

1.
- ALL EARTHWORKS CONSTRUCTION UNDER THIS CONTRACT IS TO BE PERFORMED STRICTLY IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT PREPARED BY THE PRINCIPAL'S GEOTECHNICAL CONSULTANT.
2.
- ALL COMPACTION TESTING UNDER THIS CONTRACT IS TO BE CARRIED OUT TO AS3798 LEVEL 1 STANDARD BY A NATA-ACCREDITED TESTING AUTHORITY. CERTIFICATION FOR ALL EARTHWORKS CONSTRUCTION AND TESTING IS TO BE PROVIDED BY A REGISTERED PROFESSIONAL ENGINEER QUEENSLAND (RPEQ) ENGAGED BY THE CONTRACTOR.
3.
- ALL DESIGN LEVELS SHOWN ON THE CONTRACT DRAWINGS ARE FINISHED SURFACE LEVELS FOLLOWING TOPSOIL REPLACEMENT.
4.
- ALL STRUCTURAL FILL MATERIAL PLACED SHALL BE COMPACTED TO THE FOLLOWING MINIMUM DENSITY IN ACCORDANCE WITH THE SPECIFICATION AND THE GEOTECHNICAL REPORT:

a) 95% DENSITY RATIO FOR GENERAL STRUCTURAL FILL (COHESIVE MATERIAL)

b) 98% DENSITY RATIO FOR THE TOP 300mm DEPTH BELOW PAVEMENT SUBGRADE LEVEL (COHESIVE MATERIAL)
5.
- FILL MATERIAL USED IN WETLAND BATTERS IS TO BE STIFF TO HARD CLAYS OR OTHER SUITABLE MATERIAL AS DIRECTED BY GEOTECHNICAL ENGINEER.
6.
- ALL EARTHWORKS BATTERS STEEPER THAN 1 IN 4 ARE TO BE LANDSCAPED IN ACCORDANCE WITH LANDSCAPE ARCHITECTS PLANS.
7.
- EXISTING DAMS ARE TO BE DE-WATERED AND CLEANED-OUT. ALL UNSUITABLE OR SATURATED MATERIAL IS TO BE REMOVED AND REPLACED WITH SELECTED ON-SITE STRUCTURAL FILL MATERIAL AND COMPACTED AS SPECIFIED.
8.
- PROVIDE CONDITION SURVEY OF ADJACENT RESIDENTIAL BUILDINGS FOR ALL PROPERTIES LOCATED WITHIN NOMINAL 100m OF EARTHWORKS OPERATIONS. CONDITION SURVEY TO BE UNDERTAKEN BY QUALIFIED PERSONNEL WITH BUILDING EXPERIENCE.

RETAINING WALL NOTES:

1.
- RETAINING WALLS, FOOTINGS, DRAINAGE, BACKFILL AND CONNECTION OF AGGREGATE DRAINS TO STORMWATER DRAINAGE SYSTEM TO BE DESIGNED AND CONSTRUCTED BY THE CONTRACTOR AND CERTIFIED BY AN SUITABLY QUALIFIED RPEQ
2.
- THESE DRAWINGS IDENTIFY SURFACE PROFILES, RETAINING WALL LOCATIONS, AND SETOUT INFORMATION ONLY. REFER TO CONTRACTOR SUPPLIED DRAWINGS FOR RPEQ STRUCTURAL DETAILS, WALL MATERIALS AND COMPACTION SPECIFICATIONS AND CONSTRUCTIBILITY INFORMATION.
3.
- RETAINING WALL DESIGN ENGINEER TO PROVIDE RPEQ FORM 15 STRUCTURAL CERTIFICATE INCLUDING GEOTECHNICAL GLOBAL STABILITY CERTIFICATION BY GEOTECHNICAL ENGINEER. WALL DESIGN TO ASSUME SURCHARGE LOADING BEHIND WALL. DESIGN TO BE IN ACCORDANCE WITH AS4678 INCLUDING ALL REQUIRED DESIGN LOAD CASES AND COMBINATIONS.
4.
- RETAINING WALLS TO BE DESIGNED TO CONSIDER ALL LOADS INCLUDING CONSTRUCTION LOADS AND OPERATIONAL LOADS.
5.
- ANY GEOTECHINCAL INFORMATION PROVIDED BY THE PRINCIPAL OR THE SUPERINTENDENT SHALL BE FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR AND THE RETAINING WALL DESIGN ENGINEER SHOULD SATISFY THEMSELVES OF THE DESIGN SOIL PARAMETERS AND UNDERTAKE AND ADDITIONAL GEOTECHNICAL INVESTIGATION DEEMED NECESSARY BY THE DESIGN ENGINEER.
6.
- THE CONTRACTOR SHALL ENSURE THAT ANY CONFLICT BETWEEN THESE PROJECT DRAWINGS AND THE RETAINING WALL DRAWINGS PREPARED BY THE RETAINING WALL DESIGN ENGINEER IS RESOLVED WITH THE SUPERINTENDENT PRIOR TO CONSTRUCTION COMMENCING.
7.
- A COPY OF THE RETAINING WALL DESIGN DRAWINGS, INCLUDING CONNECTION OF AGGREGATE DRAINS TO THE STORMWATER DRAINAGE SYSTEM, DESIGN PARAMETERS AND CERTIFICATION BE PROVIDED TO THE SUPERINTENDENT AT THE PRE-START MEETING PRIOR TO CONSTRUCTION COMMENCING.
8.
- ANY RETAINING WALL AND BATTER EXCEEDING THE HEIGHT OF 1.5m, THE CONTRACTOR SHALL UNDERTAKE A THIRD PARTY RPEQ REVIEW OF THE PROPOSED DESIGN.
9.
- RETAINING WALL TYPES HAVE BEEN CONCEPTUALLY DETAILED AS CONCRETE SLEEPER WALLS. WALL DESIGN ENGINEER TO CONSIDER ALTERNATIVES IF REQUIRED, DUE TO PROXIMITY OF SERVICES (GAS MAIN).
10.
- RETAINING WALLS TO PERIMETER BIO BASINS ARE TO BE WATERPROOFED, AND CONSIDER UNDERSIDE OF BIO DRAINAGE, AND WATER LOADING RESULTING FROM THE BASIN. REFER STORMWATER CONSULTING REPORT FOR DETAILS.

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COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

NORTHROCK MARULAN P/L

CLIENT :

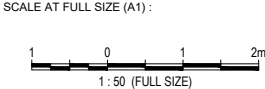
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EARTHWORKS NOTES

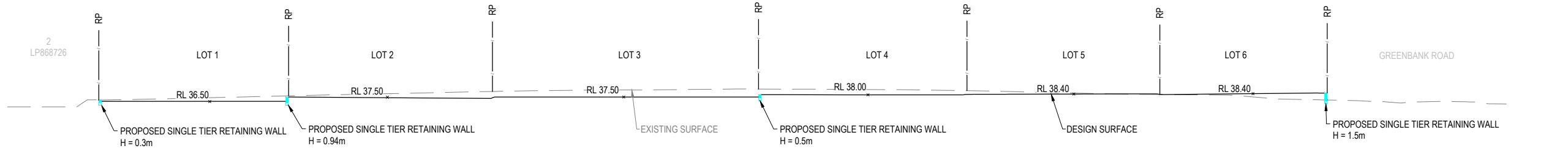
PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

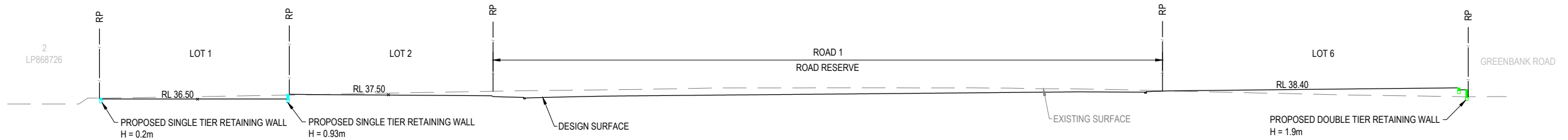
FOR APPROVAL



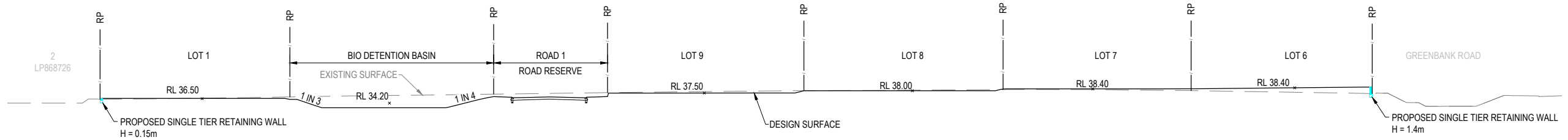
DEVEL. APPLIC. No. :		DATE : 03-03-26	
PROJECT LEADER : BLAKE HALL		DESIGNER : L.D.L.	
DRAFTSPERSON : H.A.		CHECKED : DALE MCINNES	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365			
PROJECT No.:		DRAWING No. :	VERSION:
BE240612-DA		C2602	A



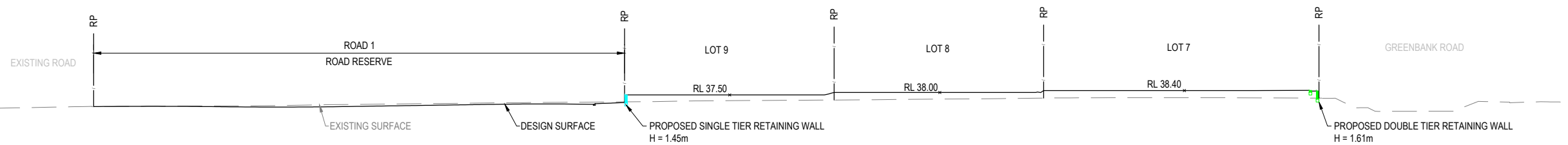
A SECTION
C2801 SCALE 1:500



B SECTION
C2801 SCALE 1:500



C SECTION
C2801 SCALE 1:500



D SECTION
C2801 SCALE 1:500

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VER.	DESCRIPTION	DATE



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ABN 76 166 942 365

CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE :

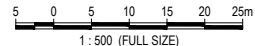
CONCEPT EARTHWORKS SECTIONS

PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

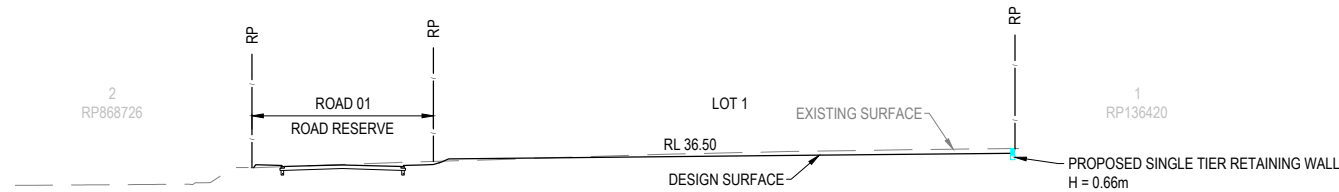
FOR APPROVAL

SCALE AT FULL SIZE (A1) :

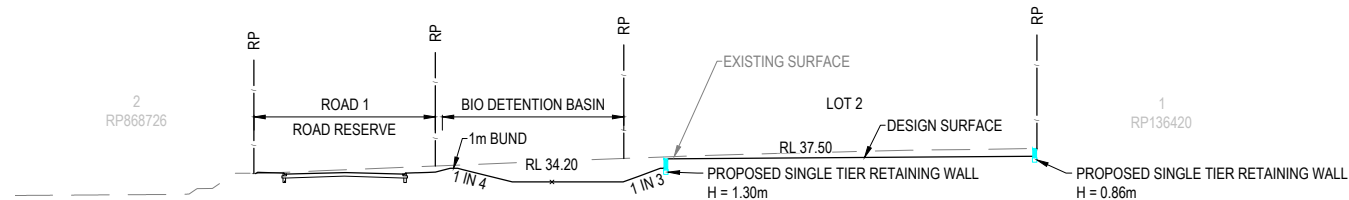


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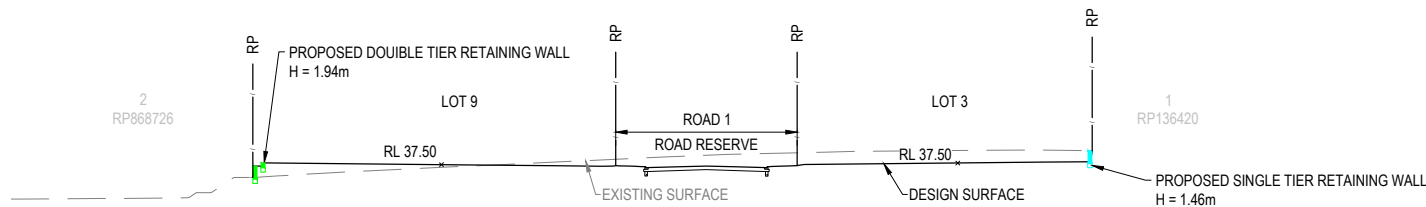
DEVEL. APPLIC. No. :		DATE : 03-03-26
PROJECT LEADER : BLAKE HALL		DESIGNER : L.D.L.
DRAFTSPERSON : H.A.		CHECKED : DALE MCINNES
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365		
PROJECT No.:		DRAWING No. :
BE240612-DA		C2801
		VERSION:
		A



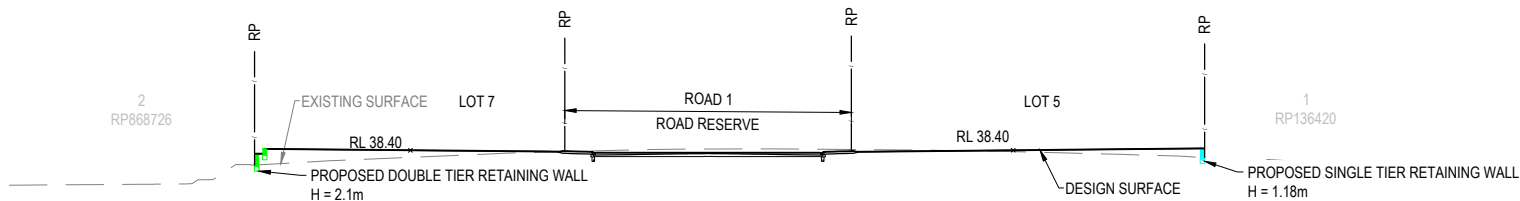
E SECTION
C2801 SCALE 1:500



F SECTION
C2801 SCALE 1:500



G SECTION
C2801 SCALE 1:500



H SECTION
C2801 SCALE 1:500

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ABN 76 166 942 365

CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE :

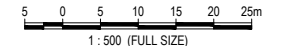
CONCEPT EARTHWORKS SECTIONS

PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

FOR APPROVAL

SCALE AT FULL SIZE (A1) :



DEVEL. APPLIC. No. :		DATE : 03-03-26	
PROJECT LEADER : BLAKE HALL		DESIGNER : L.D.L.	
DRAFTSPERSON : H.A.		CHECKED : DALE MCINNES	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365			
PROJECT No.:		DRAWING No. :	
BE240612-DA		C2802	
		VERSION:	
		A	



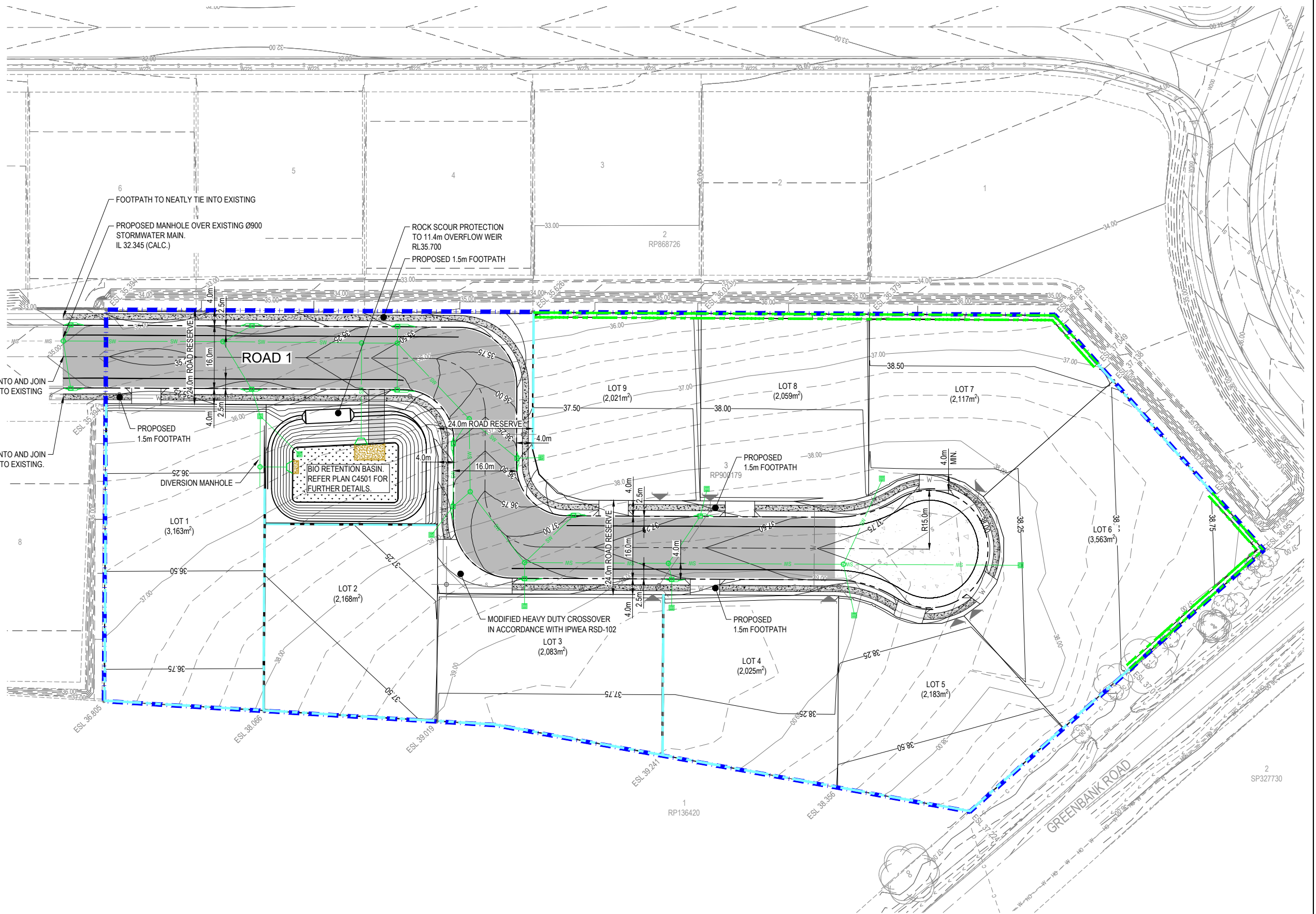
LEGEND

- 38.00 --- EXISTING SURFACE CONTOURS
- 38.00 --- DESIGN SURFACE CONTOURS (MAJOR)
- --- DESIGN SURFACE CONTOUR (MINOR)
- SW --- SW --- EXISTING STORMWATER
- W --- W --- EXISTING WATER
- S --- S --- EXISTING SEWER
- OH --- OH --- EXISTING OVERHEAD ELECTRIC
- C --- C --- EXISTING COMMS
- --- EXISTING ROAD CONTROL LINE
- --- EXISTING KERB
- --- EXISTING EDGE OF BITUMEN
- SW --- PROPOSED STORMWATER
- W --- PROPOSED WATER
- S --- PROPOSED SEWER
- --- PROPOSED ROAD CONTROL LINE
- --- PROPOSED KERB (TYPE B1)
- --- PROPOSED SLEEPER RETAINING WALL (UP TO 1.5m SINGLE TIER)
- --- PROPOSED SLEEPER RETAINING WALL (1.5m - 3.0m DOUBLE TIER)
- --- DEVELOPMENT SITE BOUNDARY
- --- PROPOSED PAVEMENT ASPHALTIC CONCRETE
- --- PROPOSED FOOTPATH
- --- PROPOSED REINFORCED CONCRETE CULDESAC
- Y Y INDICATIVE HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA RSD-102

NOTE:
THIS IS A GENERIC LEGEND. NOT ALL ITEMS WITHIN THIS LEGEND MAY BE PRESENT ON THIS PLAN AND THE SCALE OF ITEMS MAY BE DIFFERENT TO THE ITEMS PRESENTED ON THIS PLAN

NOTE:
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WARNING: UNDERGROUND SERVICES:
UNDERGROUND SERVICES EXIST IN THIS VICINITY. THE CONTRACTOR IS TO CONTACT THE RELEVANT AUTHORITIES TO CONFIRM EXACT LOCATION OF SERVICES ON SITE PRIOR TO ANY EXCAVATION OR CONSTRUCTION COMMENCING.



CONCEPT ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN

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COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE : CONCEPT ROADWORKS & STORMWATER DRAINAGE LAYOUT PLAN	PROJECT : PROPOSED INDUSTRIAL SUBDIVISION AT 806-818 GREENBANK ROAD, NORTH MACLEAN
--	---

FOR APPROVAL

SCALE AT FULL SIZE (A1) :
1 : 500 (FULL SIZE)

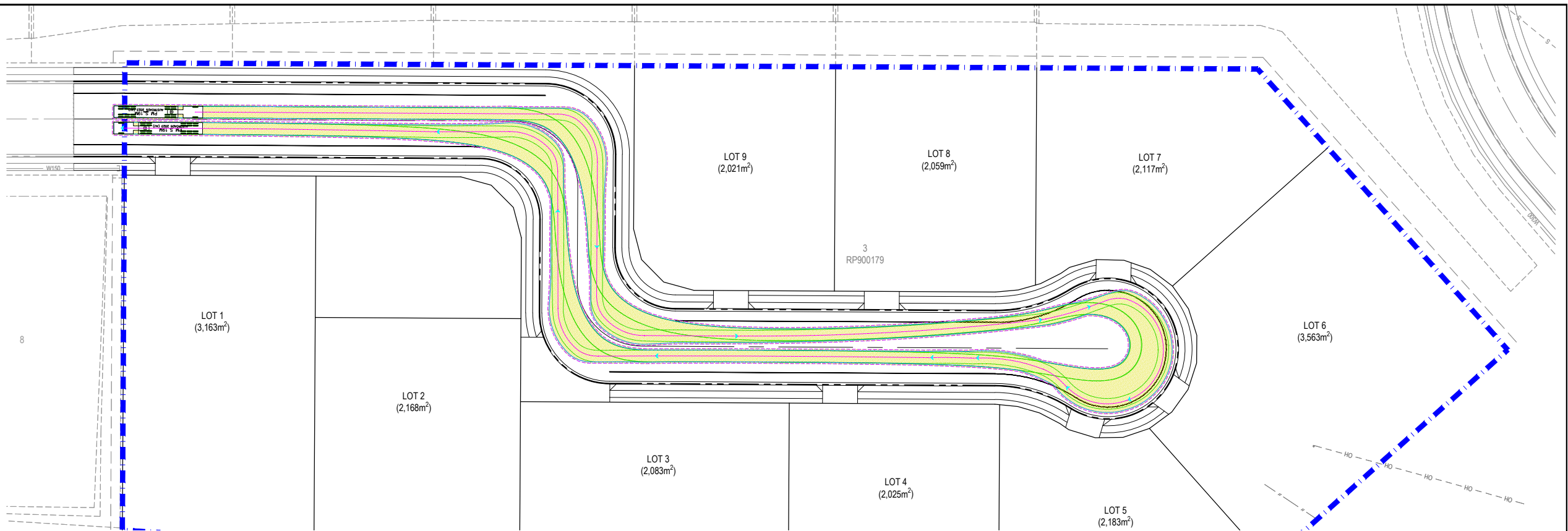
5 0 5 10 15 20 25m

DEVEL. APPLIC. No. : PROJECT LEADER : BLAKE HALL DRAFTSPERSON : H.A. APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	DATE : 03-03-26 DESIGNER : L.D.L. CHECKED : DALE MCINNES	PROJECT No. : BE240612-DA	DRAWING No. : C3101	VERSION: A
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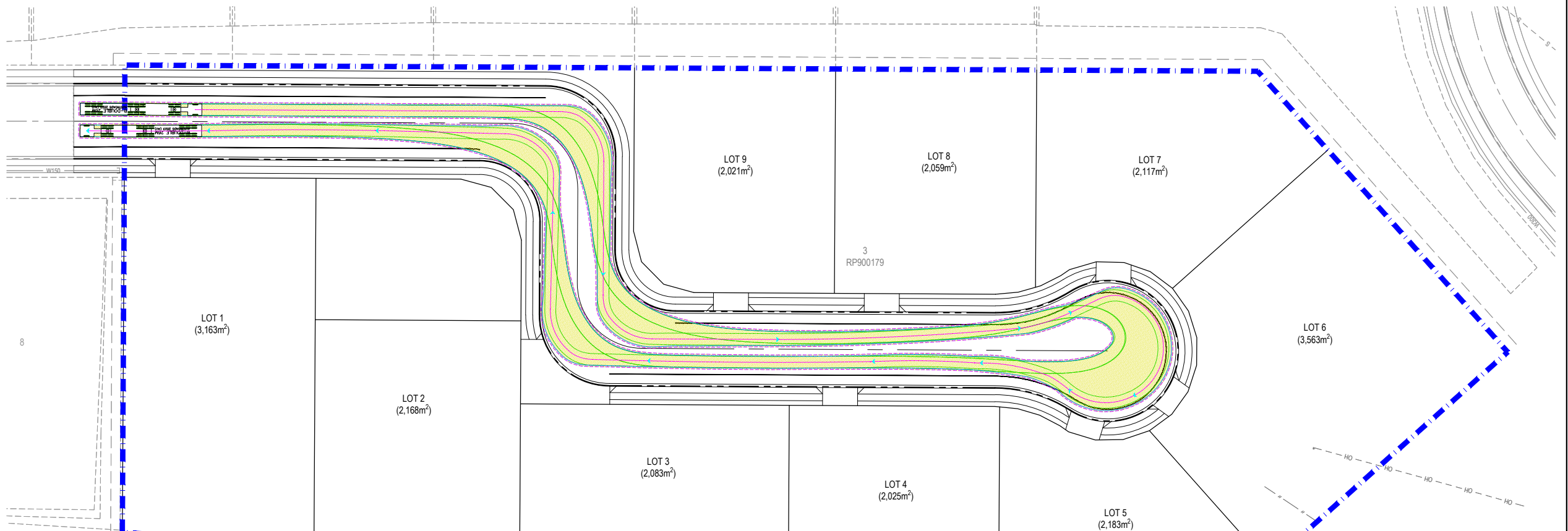


LEGEND

- PROPOSED CROSSOVER WHEELS
- BODY
- 0.3m BODY CLEARANCE
- PROPOSED BARRIER
- KERB & CHANNEL (TYPE B1)



SWEPT PATH PLAN
19.0m PRIME MOVE & SEMI TRAILER



SWEPT PATH PLAN
26.0m B-DOUBLE

NOTE:
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ABN 76 166 942 365

CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE :

ROADWORKS SWEPT PATH PLAN

PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

FOR APPROVAL

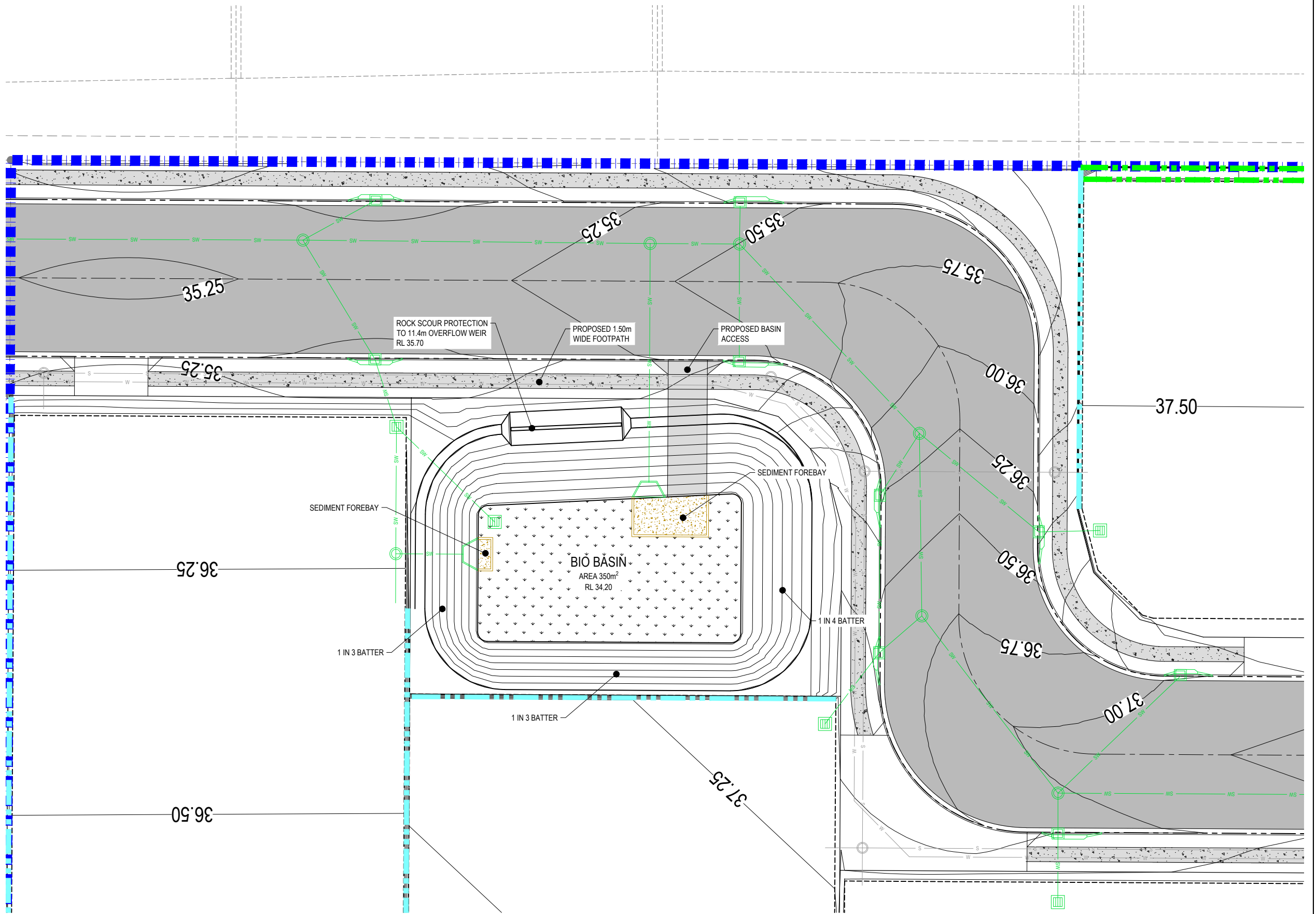
SCALE AT FULL SIZE (A1) :
5 0 5 10 15 20 25m
1 : 500 (FULL SIZE)

DEVEL. APPLIC. No. :	DATE : 03-03-26
PROJECT LEADER : BLAKE HALL	DESIGNER : L.D.L.
DRAFTSPERSON : H.A.	CHECKED : DALE MCINNES
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
PROJECT No. : BE240612-DA	DRAWING No. : C3501
VERSION: A	



LEGEND

- 38.00 — DESIGN SURFACE CONTOURS
- SW — PROPOSED STORMWATER
- — PROPOSED SLEEPER RETAINING WALL (UP TO 1.5m SINGLE TIER)
- — PROPOSED SLEEPER RETAINING WALL (1.5m - 3.0m DOUBLE TIER)
- — DEVELOPMENT SITE BOUNDARY
- PROPOSED PAVEMENT ASPHALTIC CONCRETE
- PROPOSED FOOTPATH
- PROPOSED DRIVEWAY
- Y Y INDICATIVE HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA RSD-102



CONCEPT BASIN LAYOUT PLAN

NOTE:
FINAL LEVELS SUBJECT TO DETAILED DESIGN.

NOTE:
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ABN 76 166 942 365

CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE :

PRELIMINARY STORMWATER BASIN (QUALITY ONLY) ARRANGEMENT

PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

FOR APPROVAL

SCALE AT FULL SIZE (A1):
2 0 2 4 6 8 10m
1:200 (FULL SIZE)

DEVEL APPLIC. No. :	DATE : 03-03-26
PROJECT LEADER : BLAKE HALL	DESIGNER : L.D.L.
DRAFTSPERSON : H.A.	CHECKED : DALE MCINNES
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
PROJECT No. : BE240612-DA	DRAWING No. : C4501
VERSION: A	



LEGEND

- SW — — SW — — EXISTING STORMWATER
- W — — W — — EXISTING WATER
- S — — S — — EXISTING SEWER
- OH — — OH — — EXISTING OVERHEAD ELECTRIC
- C — — C — — EXISTING COMMS
- — — — — EXISTING ROAD CONTROL LINE
- — — — — EXISTING KERB
- — — — — EXISTING EDGE OF BITUMEN
- SW — — PROPOSED STORMWATER
- W — — PROPOSED WATER
- S — — PROPOSED SEWER
- — — — — PROPOSED ROAD CONTROL LINE
- — — — — PROPOSED KERB
- — — — — PROPOSED SLEEPER RETAINING WALL (UP TO 1.5m SINGLE TIER)
- — — — — PROPOSED SLEEPER RETAINING WALL (1.5m - 3.0m DOUBLE TIER)
- — — — — DEVELOPMENT SITE BOUNDARY
- Y Y INDICATIVE HEAVY DUTY CROSSOVER IN ACCORDANCE WITH IPWEA RSD-102

CONNECTION TO EXISTING SEWER MAIN PROVIDED BY ADJOINING DEVELOPMENT

CONNECTION TO EXISTING WATER MAIN PROVIDE BY BY ADJOINING DEVELOPMENT

NOTE:
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COOTE BURCHILLS ENGINEERING PTY LTD
ABN 76 166 942 365

CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE :

CONCEPT SERVICES LAYOUT PLAN

PROJECT :

PROPOSED INDUSTRIAL SUBDIVISION
AT
806-818 GREENBANK ROAD, NORTH MACLEAN

FOR APPROVAL

SCALE AT FULL SIZE (A1) :
5 0 5 10 15 20 25m
1 : 500 (FULL SIZE)

DEVEL. APPLIC. No. :	DATE : 03-03-26
PROJECT LEADER : BLAKE HALL	DESIGNER : L.D.L.
DRAFTSPERSON : H.A.	CHECKED : DALE MCINNES
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365	
PROJECT No. : BE240612-DA	DRAWING No. : C5101
VERSION: A	

QMS RISK & OPPORTUNITIES REGISTER							
SAFETY IN DESIGN – NORMAL DESIGN RISKS - CIVIL							
Design Element	Associated risks & opportunities	Raw risk assessment		Raw risk rating	Treatment Measures to avoid, minimize or treat the risk.	Responsibility	Residual risk rating
		Likelihood	Consequence				
CONSTRUCTION PHASE							
SITE ACCESS	Unsafe site access and egress point, restricted access, flooding, unauthorised access from persons or animals	L	M	L-M	Prepare site specific Construction Traffic Management Plan and Workplace Health and Safety Management Plan	Principal Contractor	L
CLEARING & DEMOLITION	Removal of existing structures, decommission of services, vegetation clearing and fauna management	M	H	M-H	Contractor to obtain Demolition Permit, arrange all service disconnections with asset ownerand carry out vegetation works in accordance with Vegetation and Fauna Management Plan	Principal Contractor	L
EXISTING SERVICES	Disturb or damage existing services and infrastructure, overhead powerlines, work adjacent to existing services, existing service relocations	M	H	M-H	Client to commission detailed site survey and service potholing at critical locations. Contractor to undertake Dial Before You Dig and service verification with service authority providers and undertake additional potholing prior to construction	Client and Principal Contractor	L-M
EXCAVATION & TRENCHING	Unstable existing slopes and landslip, steep cut profiles, deep trench excavations, working at heights, intercept water table, dispersive soils, acid sulphate soils	M	H	M-H	Client to commission a geotechnical investigation and contractors to undertake own investigations. Temporary and final earthworks profiles confirmed by client's geotechnical consultant. Temporary earthworks profile to be confirmed by Contractor's geotechnical consultant. Contractor to provide temporary benching, fencing, stabilisation and shoring.	Client and Principal Contractor	L
MATERIALS HANDLING	Manual handling, handling and disposal of sharps, repetitive work processes, hazardous substances	H	M	M-H	Contractor or provide a site specific Workplace Health and Safety Management Plan including Material Safety Data Sheets	Principal Contractor	L
PLANT & EQUIPMENT	Operation of plant and machinery, site access by visitors, material deliveries and waste removal	M	H	M-H	Contractor or provide a site specific Workplace Health and Safety Management Plan including register of operator machinery tickets. Contractor to maintain a site visitor register and provide site specific induction to all visitors	Principal Contractor	L
OPERATIONAL PHASE							
ROADS & PATHWAYS	General road safety, flood free access, pedestrian and cyclist injuries, inadequate signage	L	H	M	Design, approvals and construction undertaken in accordance with Australian, State Government and Local Authority standards, codes, guidelines and best practice	Asset Owner	L
STORMWATER / FLOODING	Hazard from storm and flood water depths and velocities, ponding and access to inlets, outlets and basins	M	H	M-H	Design, approvals and construction undertaken in accordance with Australian, State Government and Local Authority standards, codes, guidelines and best practice	Asset Owner	L
WATER & SEWER	Blockages, contamination, interruption to service, access to fittings, confined space access	L	M	L-M	Design, approvals and construction undertaken in accordance with Australian, State Government and Local Authority standards, codes, guidelines and best practice	Asset Owner	L
WALLS & FENCING	Risk of falls, unauthorised access from persons and animals, structural failure	M	M	M	Design, approvals and construction undertaken in accordance with Australian, State Government and Local Authority standards, codes, guidelines and best practice	Asset Owner	L
MAINTENANCE PHASE							
ROADS & PATHWAYS	All as for construction and operation phases					Asset Owner	
STORMWATER / FLOODING	All as for construction and operation phases					Asset Owner	
WATER & SEWER	All as for construction and operation phases					Asset Owner	
WALLS & FENCING	All as for construction and operation phases					Asset Owner	
REFURBISHMENT PHASE							
ROADS & PATHWAYS	All as for construction and operation phases					Asset Owner	
STORMWATER / FLOODING	All as for construction and operation phases					Asset Owner	
WATER & SEWER	All as for construction and operation phases					Asset Owner	
WALLS & FENCING	All as for construction and operation phases					Asset Owner	
DEMOLITION PHASE							
ROADS & PATHWAYS	All as for construction and operation phases					Asset Owner	
STORMWATER / FLOODING	All as for construction and operation phases					Asset Owner	
WATER & SEWER	All as for construction and operation phases					Asset Owner	
WALLS & FENCING	All as for construction and operation phases					Asset Owner	

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CLIENT :

NORTHROCK MARULAN P/L

DRAWING TITLE : HAZARD RISK REGISTER - DESIGN RISKS	FOR APPROVAL SCALE AT FULL SIZE (A1) :
PROJECT : PROPOSED INDUSTRIAL SUBDIVISION AT 806-818 GREENBANK ROAD, NORTH MACLEAN	

DEVEL. APPLIC. No.:		DATE: 03-03-26	
PROJECT LEADER : BLAKE HALL		DESIGNER : L.D.L.	
DRAFTSPERSON : H.A.		CHECKED : DALE MCINNES	
APPROVED FOR AND ON BEHALF OF BURCHILLS ENGINEERING SOLUTIONS ABN 76 166 942 365			
PROJECT No.:		DRAWING No.:	VERSION:
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